CHAPTER 4
ASSEMBLING THE INSPECTION TOOL KIT

4-1. Introduction

The play area inspection tool kit should be assembled by the CDC Director and Installation Safety Officer. The tool kit is used along with the site-adapted DA Form 731 O-R, Child Development Center (CDC) Play Area Checklist, to inspect a play area. The tools allow staff to take simple measurements within the play area to determine compliance with child safety guidelines. A list of purchased tools necessary for play area inspections is provided.

4-2. Tools needed for play area inspection

The tools needed for play area inspection are commercially available. The tools can be kept in a tote bag for ready access and portability during inspection. The play area inspection tools include:

Eight-meter (25-foot) Tape Measure.
b. *Electronic Level,*
c. *Six Hundred Millimeter (24-inch) Ruler.*
d. *Torso Probe (fig 4-1)*.*
e. *Head Probe (fig 4-2)*.*
f. *Set of Three Protrusion Inspection Gauges (fig 4-3)*.*
g. *Protrusion Gauge for Swing Seats and Hardware (fig 4-4) *.*
h. *Articulated Web Stop Probe (fig 4-5)**.*

*CPSC and ASTM recommended tools commercially available through NRPA (appendix A).
**ASTM recommended tool commercially available through Underwriters Laboratories (appendix A).

4-3. Using the specialized tools to inspect the play area

The following paragraphs describe how to inspect the play area for hazards using the specialized tools from the inspection tool kit. The Installation Safety Officer will ensure that the inspection team performs these techniques as stated.

4-4. Head and neck entrapment

Any completely bounded opening that is accessible to children should meet all entrapment inspection requirements. The torso probe and head probe should be used to inspect openings for possible head and neck entrapments (fig 4-1 and 4-2). Openings between the safety surfacing and the bottom edge of the play area element are exempt from entrapment requirements (fig 4-6).

a. Completely Bounded Opening. Any opening enclosed on all sides with a continuous perimeter is considered a completely bounded opening.

b. Accessible Opening. An opening is considered accessible when a torso probe maybe inserted into the opening to a depth of 100 mm (4 inches) or greater.

c. *Inspection Procedure for Rigid Openings.* The sides of rigid openings are fixed and do not change form. Examples of rigid openings include the openings between platforms, rung ladders, and steps. To pass the inspection procedure, the opening will not permit the torso probe to pass through it or the opening will permit both the torso and head probes to pass through it.

(1) Using the torso probe. The torso probe should be held parallel to the opening. The inspector will attempt to insert the probe into the opening. If the probe does not fit through the opening to a depth of 100 mm (4 inches) or more when rotated in any direction, the opening is not a potential entrapment and requires no further inspection. If the torso probe does pass through the opening, the inspector will inspect the opening with the head probe.

(2) Using the head probe. The head probe should be held parallel to the opening. The inspector should attempt to insert it through the opening. If the probe does not pass freely through the opening, the space is a potential entrapment.

d. Inspection Procedure for Nonrigid Openings. Nonrigid openings, such as openings in flexible nets, tarps, and plastic enclosures, change shape when pressure is applied. To pass the inspection, the opening must not permit the base of the torso probe to pass through or must permit both the torso probe and the head probes to pass through.

(1) Using the torso probe. The probe should be held parallel to the opening. The inspector will attempt to push or pull the probe through the opening using not more than 20 kg (50 pounds) of pressure. If the base of the probe does not fit through the opening when rotated in any direction, the opening is not a potential entrapment and requires no further testing. If the torso probe does pass through the opening, the inspector will inspect the opening with the head probe.

(2) Using the head probe. The head probe should be held parallel to the opening. The inspector will attempt to insert it through the opening. If the probe does not pass freely through the opening, the space is a potential entrapment.

e. Inspection Procedure for Openings With Limited Depth. An example of an opening with limited depth is a ladder with a barrier behind it. In openings with limited depth, there are two potential entrapment areas:

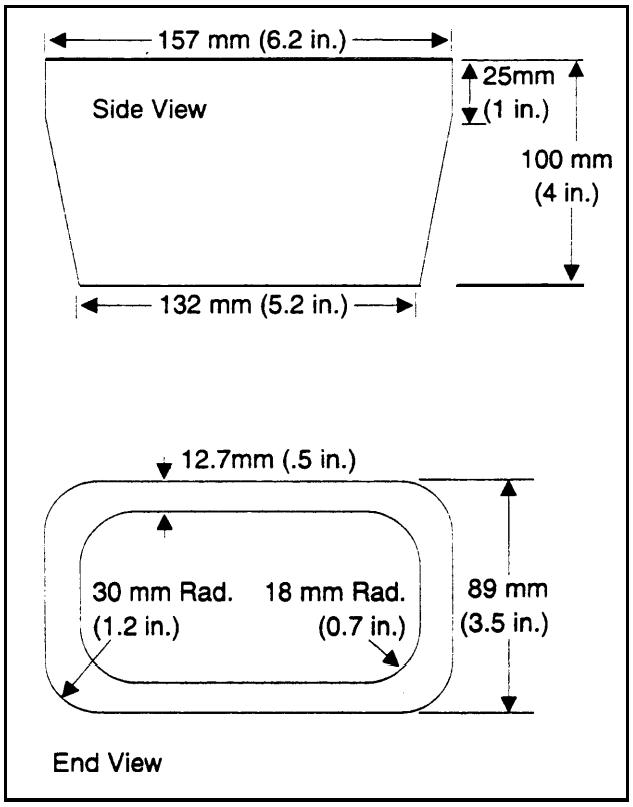


Figure 4-1: Torso probe.

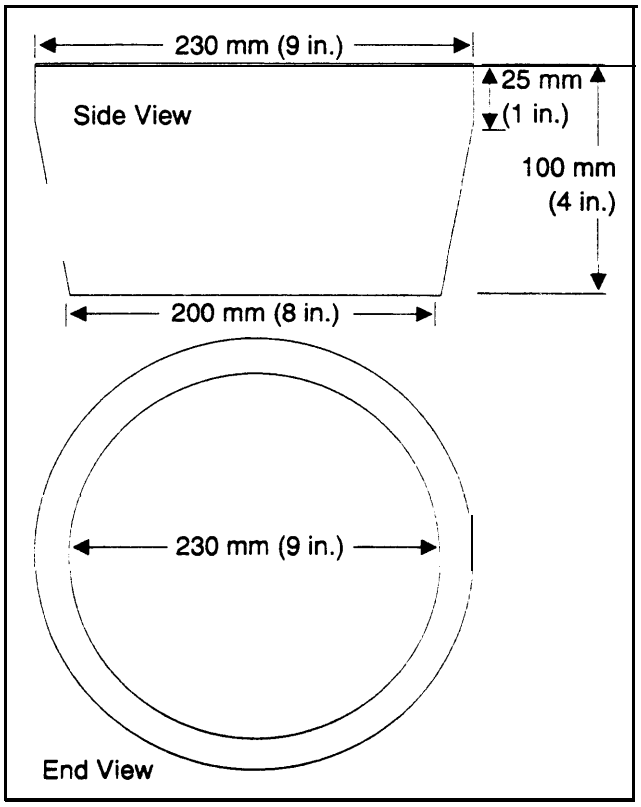


Figure 4-2: Head probe.

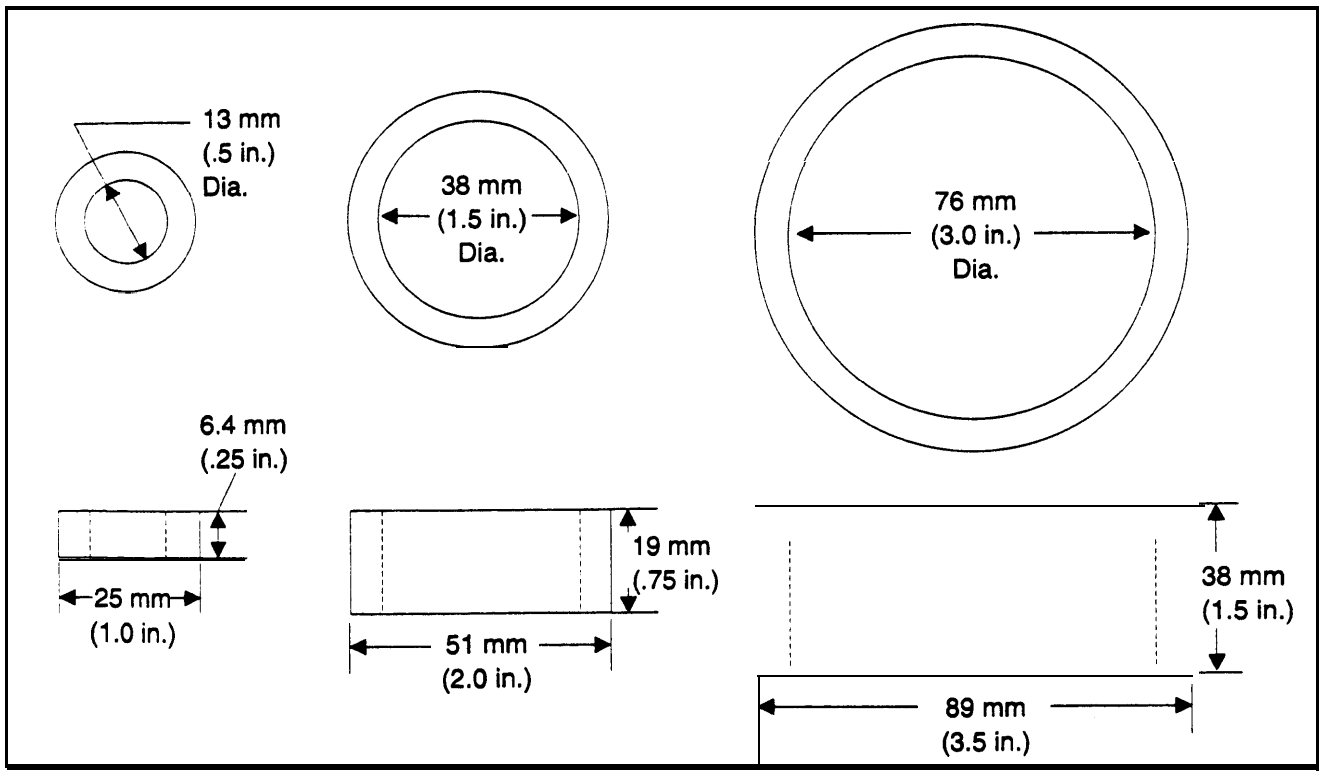


Figure 4-3: Set of three protrusion inspection gauges.

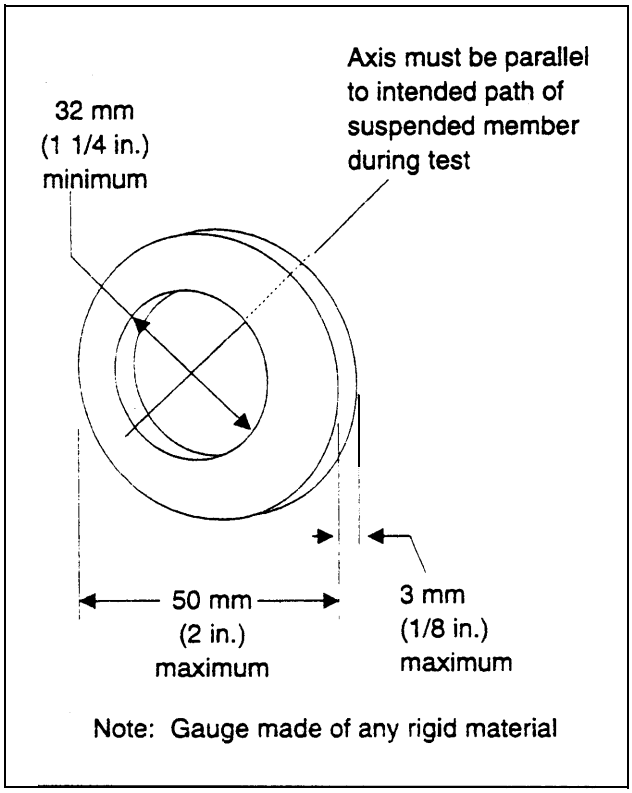


Figure 4-4: Protrusion gauge for swing seats and hardware.

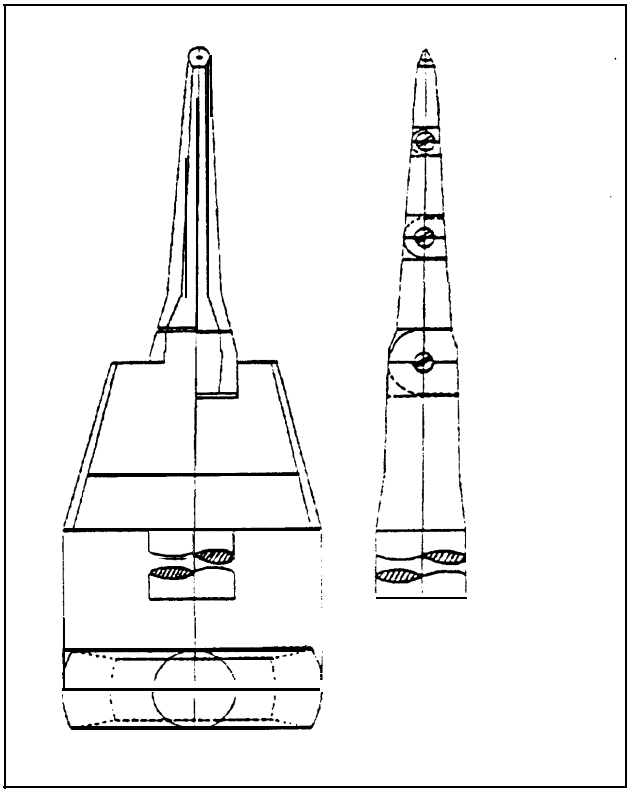


Figure 4-5: Articulated web stop probe.

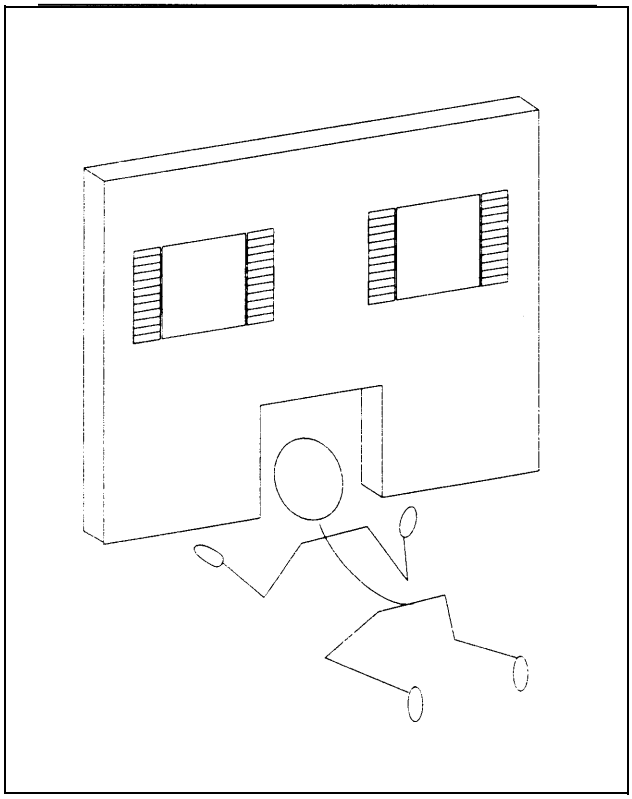


Figure 4-6: Surfacing serves as bottom edge of opening.

a vertical opening (A) and a horizontal opening (B) (fig 4-7). The inspection "procedure emulates a child crawling into the vertical opening feetfirst and passing downward through the horizontal space. To pass the inspection, the vertical opening (A) will not permit the torso probe to pass through it, or the torso probe may pass through the vertical opening (A), but not the horizontal opening (B). If the torso probe passes through both openings, the head probe will also pass through both openings.

(1) Inspecting vertical opening (A) with the torso probe. The torso probe should be used to inspect the vertical opening (A). The probe should be held parallel to the opening. The inspector will attempt to insert the probe into the opening. If the probe does not fit into the opening when rotated in any direction, the opening is not a potential entrapment and requires no further inspection. If the torso probe does pass through the opening, the inspector will inspect the horizontal opening (B) with the torso probe.

(2) Inspecting horizontal opening (B) with the torso probe. The torso probe should be held horizontally with the longest end of the tool against the edge of the vertical opening (A). The inspector will attempt to insert the probe into the opening. If the probe does not fit through the opening, the space is not large enough for a child to completely enter it. It is not an entrapment. If the torso probe does pass through the horizontal

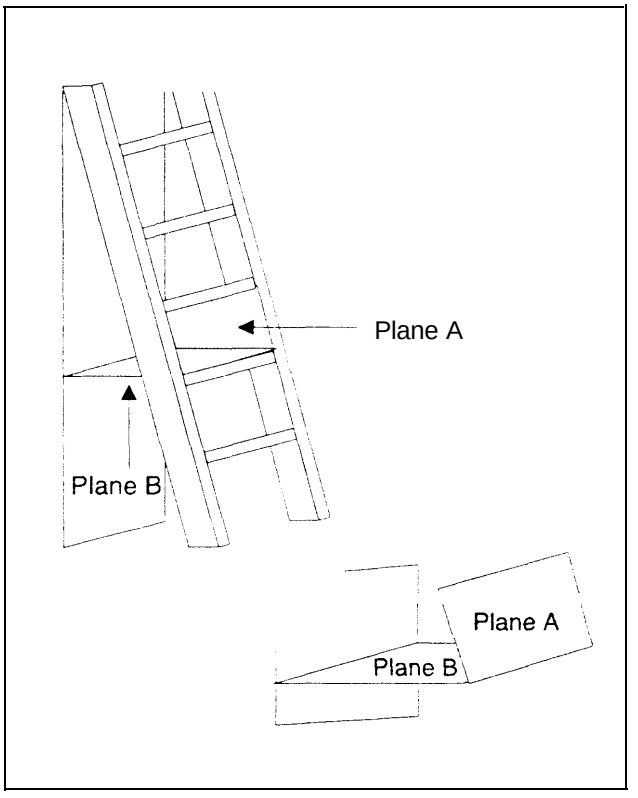


Figure 4-7: Opening with limited depth.

opening (B), the inspector will inspect both openings (A and B) with the head probe.

(3) *Inspecting the vertical and horizontal openings with the head probe. The* head probe should be held parallel parallel to the openings A and B. The inspector will attempt to insert it through the openings. If the head probe passes through both spaces, there is no entrapment. If the probe does not pass freely through both openings, the space is a potential head and neck entrapment.

f. Angular Openings. Angles may be formed by adjacent intersecting surfaces or by surfaces that would intersect if projected. Ail angles formed by the surfaces of an opening should be at least 550 (fig 4-8). The head probe will be used to inspect angular openings for potential head and neck entrapments.

(1) Inspecting angular openings with the head probe. The distance between angle surfaces should be greater than 230 mm (9 inches) to prevent head entrapment. To measure compliance, the head probe should be inserted between the angle surfaces. It should not contact both surfaces of the angle simultaneously when the probe is rotated to any orientation.

(2) Inspecting inverted angles. An angle is inverted if the lower edge of the angle is horizontal or slopes downward (fig 4-8). An inverted angle cannot entrap the head or neck, and is exempt from requirements for angular openings.

(3) *Inspecting an angle with a filled apex.* To measure compliance, the head probe should be inserted between the angle surfaces. If an angle less than 55° is infilled so that the head probe cannot contact both surfaces of the angle simultaneously when the probe is rotated to any orientation, the angle is not considered an entrapment hazard (fig 4-9).

4-5. Protrusions

Hardware, pipes, posts, or other structural members that that extend in any direction from play equipment, site elements, or site furnishings should be inspected with the set of three protrusion gauges (fig 4-3). A separate protrusion gauge is used to inspect swing seat and swing hardware protrusions (fig 4-4). A measuring tape or ruler is also required. A protrusion is considered inaccessible and exempt from protrusion requirements when recessed or located so that a protrusion gauge cannot be placed over it.

a, Inspection Procedure for Protrusions. Protrusions should be tested by successively placing each of the three test gauges over the protrusion. If the protrusion fits inside any gauge, the protrusion should not extend beyond the face of the gauge in order to pass the inspection. The inspector should also visually inspect each protrusion to ensure that no protrusion increases in diameter from the surface to the exposed end. Any caps or coverings should also be visually inspected to ensure that these caps fit flush against the nut or surrounding surface.

b. Inspection Procedure for Compound Protrusions. For compound protrusions, the inspector will successively place gauges over increasing diameters to determine compliance (fig 4-1 O). To pass the inspection, protrusions should not extend beyond the face of any of the three test gauges.

c, Inspection Procedure for Vertical Protrusions. If a vertical protrusion fits within any of the three test gauges, the length of the protrusion should be measured. To pass the inspection, the protrusion should not not project more than 3 mm (1/8-inch) above the adjacent horizontal surface.

d. Inspection Procedure for Compound Vertical Protrusions. For compound vertical protrusions, the length of each individual protrusion surface should be measured (fig 4-1 1). To pass the inspection, the length of each individual protrusion surface should not not project more than 3 mm (1/8-inch) above the adjacent horizontal surface. Next, the compound vertical protrusions should be tested by successively placing each of the three protrusion test gauges over the protrusion. To pass the inspection, the total length of the protrusion should not extend beyond the face of any of the three test gauges.

e. *Inspection Procedure for Swing Seat and* Swing *Hardware Protrusions.* The swing protrusion test gauge should be placed over the protrusion (fig 4-4). To

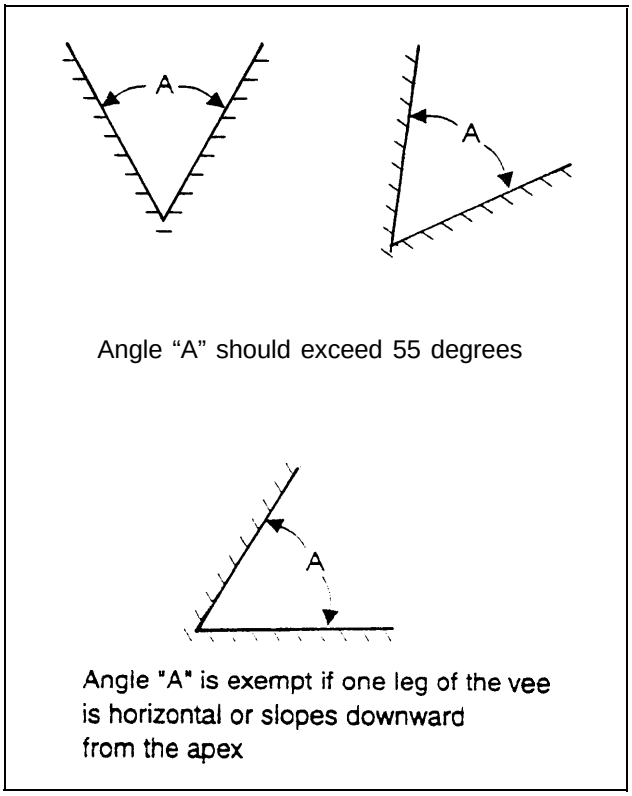


Figure 4-8: Recommendations for angles.

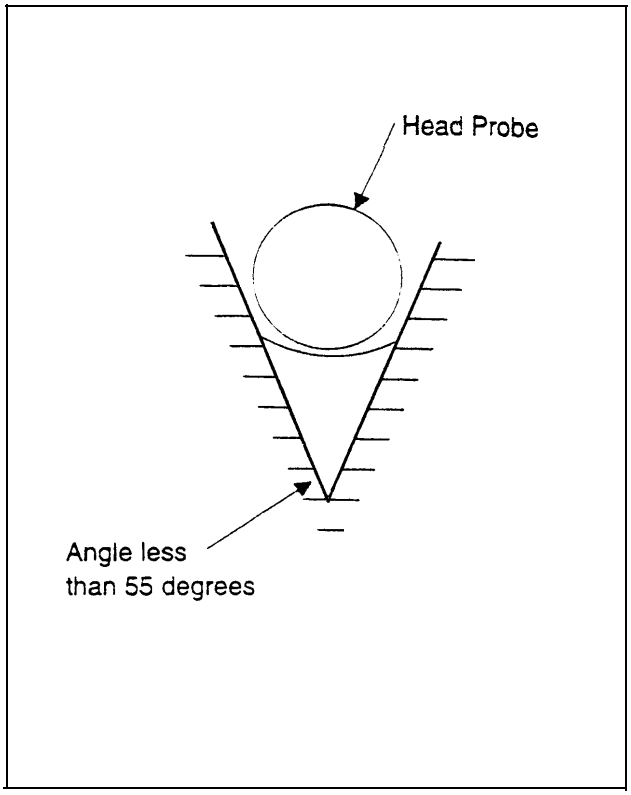


Figure 4-9: Filled apex for angles less than 55 degrees.

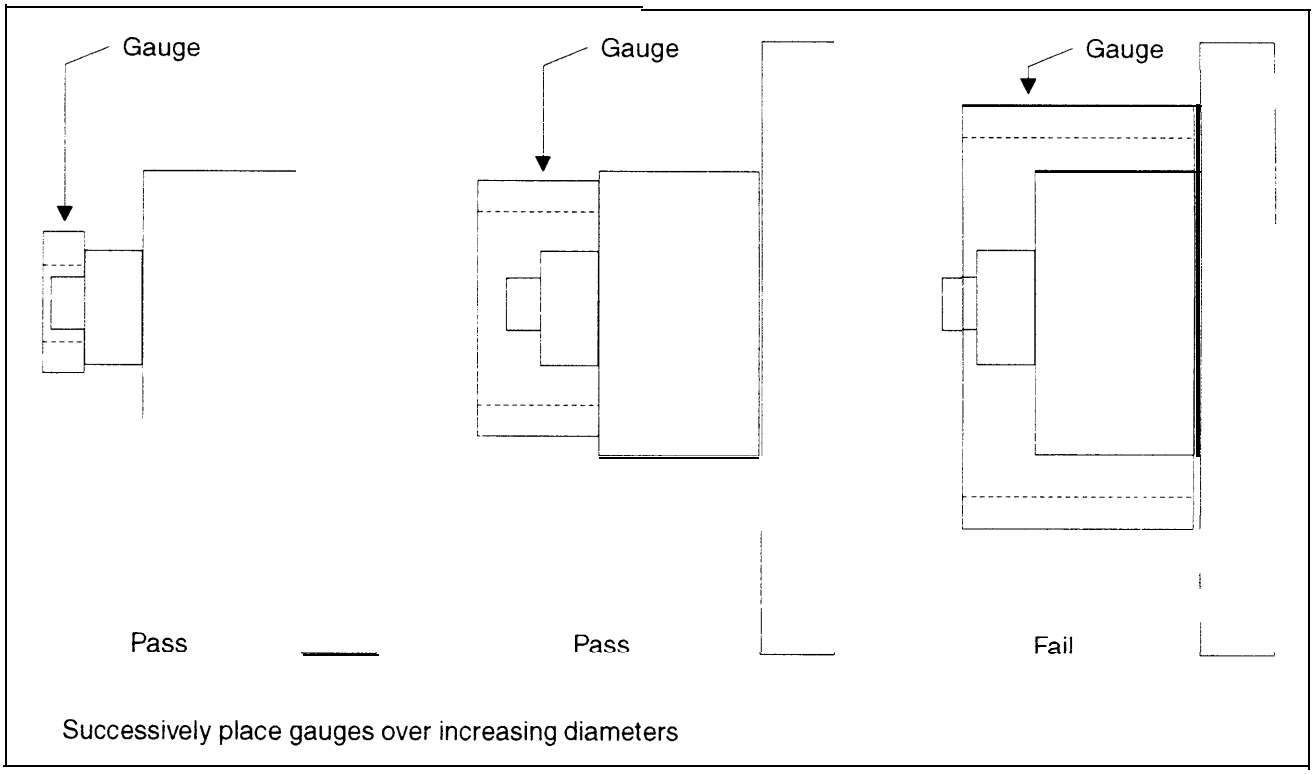
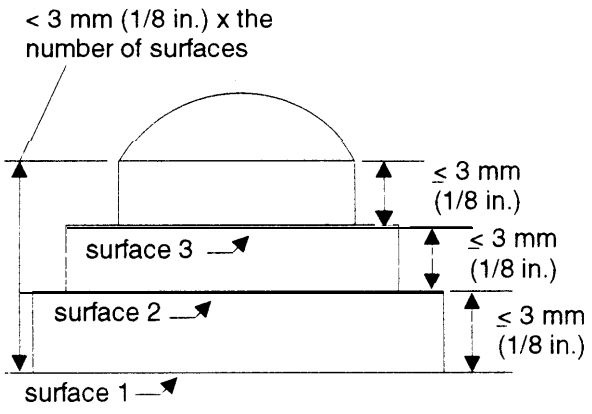


Figure 4-10: Compound protrusions.



After passing the regular protrusion test, no vertical protrusion is greater than 3 mm (1/8 in.) above previous horizontal surface.

Figure 4-11: Compound vertical protrusions.

pass the inspection, no protrusion should extend beyond the face of the gauge.

4-6. Pinch, crush, and shear points

Openings that may provide access to potential pinch, crush, and shear points should be inspected with the articulated web stop probe (fig 4-5). A tape measure will also be needed.

a. Inspection Procedure for Openings With a Minor Dimension of Less Than 25 mm (1-inch). The inspector will insert the articulated web stop probe point first into the opening in all possible positions with a force not to exceed 4 N (1 pound)). To pass the inspection, the finger probe should not touch any pinch, crush, or shear point.

b. Inspection Procedure for Openings With a Minor Dimension of 25 mm (l-inch) or Greater. When potential pinch, crush, or shear points are covered with material that contains openings of 25 mm (l-inch) or greater, measure the distance from the opening to the potential pinch, crush, or shear point. To pass the inspection, the distance measure should meet the requirements of table 4-1.

Table 4-1: Minimum distance to pinch, crush, or shear point.

Minimum Dimensions of Opening		Minimum Distance from Opening to Part	
Millimeters	Inches	Millimeters	Inches
25	1	175	6-1/2
30	1-1/4	200	7-1/2
40	1-1/2	300	12-1/2
50	1-7/8	400	15-1/2
50	2-1/8	450	17-1/2
>50 and <150	>2-1/8 and <6	750	30